School of Natural Sciences and Mathematics

Actuarial Science (BS)

The Bachelor of Science Actuarial Science (AS) Program at The University of Texas at Dallas is administered through the Department of Mathematical Sciences.

Students receive a rigorous mathematical background including all the major courses taken by students majoring in mathematics or statistics. Further, ten courses devoted to finance, economics, applied statistics, insurance, and actuarial science are required. Upon completion of this program, a student will have the knowledge and business background necessary to pursue a career as an actuary, as well as to undertake graduate study in actuarial science, statistics, mathematics, economics, or finance.

Bachelor of Science in Actuarial Science

Degree Requirements (120 semester credit hours)\(^1\)

Faculty

**Professors:** Larry P. Ammann, Zalman I. Balanov, Vladimir Dragovic, Sam Efromovich, Yulia Gel, M. Ali Hooshyar, Wieslaw Krawcewicz, Susan E. Minkoff, L. Felipe Pereira, Dmitry Rachinskiy, Viswanath Ramakrishna, Robert Serfling, Janos Turi, John Zweck

**Professors Emeritus:** Patrick Odell, John W. Van Ness

**Clinical Professors:** Natalia Humphreys, Wenyi (Roy) Lu

**Associate Professors:** Swati Biswas, Yan Cao, Min Chen, Pankaj K. Choudhary, Mieczyslaw K. Dabkowski

**Assistant Professors:** Mohammad Akbar, Maxim Arnold, Bhargab Chattopadhyay, Qingwen Hu, Frank Konietschke, Yifei Lou, Oleg Makarenkov, Tomoki Oshawa, Qiongxia (Joanne) Song, Anh Tran

**Senior Lecturers:** Mohammad Ahsan, Kelly Aman, Malgorzata Dabkowska, Rabin Dahal, Anatoly Eydelzon, Manjula Foley, Bentley T. Garrett, Farid Khafizov, Yuly Koshevnik, David L. Lewis, Changsong Li, Brady McCary, Derege Mussa, My Linh Nguyen, Jigarkumar Patel, Paul Stanford, Julie Sutton, Tristan Whalen

**UT Dallas Affiliated Faculty:** Hervé Abdi, Titu Andreescu, Alain Bensoussan, Stefano Leonardi, John J. Wiorkowski, Zhenyu Xuan, Hyuntae Yoo, Michael Qiwei Zhang

**Adjunct Faculty from the Research for Mathematics of the Mexican Council and Technology:** Jose Gomez-Larranaga, Adolfo (Sanchez) Valenzuela

I. Core Curriculum Requirements: 42 semester credit hours\(^2\)

**Communication:** 6 semester credit hours
COMM 1311 Survey of Oral and Technology-based Communication
RHET 1302 Rhetoric

Mathematics: 3 semester credit hours
MATH 2417 Calculus I\(^3,4\)

Life and Physical Sciences: 6 semester credit hours\(^5\)
PHYS 2325 Mechanics
or PHYS 2421 Honors Physics I - Mechanics and Heat
or CHEM 1311 General Chemistry I
PHYS 2326 Electromagnetism and Waves
or PHYS 2422 Honors Physics II - Electromagnetism and Waves
or CHEM 1312 General Chemistry II

Language, Philosophy and Culture: 3 semester credit hours
HUMA 1301 Exploration of the Humanities

Creative Arts: 3 semester credit hours
ARTS 1301 Exploration of the Arts

American History: 6 semester credit hours
HIST 1301 U.S. History Survey to Civil War
HIST 1302 U.S. History Survey from Civil War

Government / Political Science (6 semester credit hours)
GOVT 2305 American National Government
GOVT 2306 State and Local Government

Social and Behavioral Sciences: 3 semester credit hours
ECON 2301 Principles of Macroeconomics

Component Area Option: 6 semester credit hours
MATH 2417 Calculus I\(^3,4\)
MATH 2419 Calculus II\(^3,4\)
PHYS 2125 Physics Laboratory I\(^5\)
II. Major Requirements: 78 semester credit hours

**Major Preparatory Courses: 33 semester credit hours beyond Core Curriculum**

- **ACCT 2301** Introductory Financial Accounting
- **ACCT 2302** Introductory Management Accounting
- **BCOM 3310** Business Communication
- **CS 1336** Programming Fundamentals
- **CS 1136** Computer Science Laboratory
- **CS 1337** Computer Science I
- **ECON 2302** Principles of Microeconomics
- **MATH 2417** Calculus I[^3],[^4],[^6]
- **MATH 2419** Calculus II[^3],[^4],[^6]
- **MATH 2418** Linear Algebra
- **MATH 2420** Differential Equations with Applications
- **MATH 2451** Multivariable Calculus with Applications
- **PHYS 2325** Mechanics[^5]
  - or **PHYS 2421** Honors Physics I - Mechanics and Heat[^5]
  - or **CHEM 1311** General Chemistry I[^5]
- **PHYS 2326** Electromagnetism and Waves[^5]
  - or **PHYS 2422** Honors Physics II - Electromagnetism and Waves[^5]
  - or **CHEM 1312** General Chemistry II[^5]
- **PHYS 2125** Mechanics Laboratory[^5]
- **PHYS 2126** Electromagnetism and Waves Laboratory
- **CHEM 1111** General Chemistry I Laboratory
  - or **CHEM 1112** General Chemistry II Laboratory

**Major Core Courses: 45 semester credit hours**

- **ACTS 4301** Principles of Actuarial Models: Life Contingencies I
- **ACTS 4302** Principles of Actuarial Models: Financial Economics
- **ACTS 4304** Construction and Evaluation of Actuarial Models
- **ACTS 4308** Actuarial Financial Mathematics
III. Elective Requirements: 1 semester credit hour

Freshman students are required to take **UNIV 1010**.

**Preparation for Actuarial Exams**

Exam 1/P: **STAT 4351** or **ACTS 4306**

Exam 2/FM: **ACTS 4308, FIN 3320**

Exam 3L/MLC: **ACTS 4301**

Exam 3F/MFE: **ACTS 4302**

Exam 4/C: **ACTS 4304**

**Validation by Educational Experience (VEE) Credits**

Applied Statistical Methods: **STAT 3355** and **STAT 4382**

Corporate Finance: **FIN 3320**

Economics: **ECON 2301** and **ECON 2302**

**Fast Track Baccalaureate/Master's Degrees**

In response to the need for post-baccalaureate education, a Fast Track program is available to well-qualified UT Dallas undergraduate students. Qualified seniors may take up to 15 graduate semester credit hours that may be used to complete the baccalaureate degree and also to satisfy the requirements for the master's degree. Interested students should see the Associate Dean of Undergraduate Education (ADU) for specific requirements.

1. Incoming freshmen must enroll and complete requirements of UNIV 1010 and the corresponding
school-related freshman seminar course. Students, including transfer students, who complete their core curriculum at UT Dallas must take UNIV 2020.

2. Curriculum Requirements can be fulfilled by other approved courses from accredited institutions of higher education. The courses are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at UT Dallas.

3. A required Major preparatory course that also fulfills a Core Curriculum requirement. Semester credit hours are counted in Core Curriculum.

4. Three semester credit hours of Calculus are counted to fulfill the Mathematics Core Requirement with the remaining five semester credit hours to be counted under Component Area Option Core Requirement.

5. Six semester credit hours of Physics are counted under Science core, and one semester credit hour of Physics (PHYS 2125) are counted under Component Area Option core.

6. Students may choose one of the following calculus sequences: (a) MATH 2413, MATH 2414, and MATH 2415; or (b) MATH 2417 and MATH 2419.

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